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ABSTRACT

The effects of making ratings of idea importance, saliency, or textual imagery on story recall was investigated with 180 students (second and sixth grade normal students and mildly mentally retarded adolescents). Ss in eighteen groups attempted to recall a story presented auditorially and in print either before rating on a textual variable (recall-rate) or after rating on a textual variable (rate-recall). Ss were asked to recount the story on a taperecorder, and recordings were analyzed for accuracy in differentially identifying levels of structural importance, idea saliency, and imagery of idea subunits. Ss were more accurate in identifying units low in structural importance than units of high importance. Grade differences were found in the ability to accurately rate the idea saliency of idea units. Findings suggested that mentally retarded students may not be able to selectively attend to the important ideas of a story while selectively nonattending to the salient but unimportant ideas. Mentally retarded students recalled less than both the second and sixth grade Ss but operated more closely to the second grade Ss. (CL)

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Effects of Textual Dimensions on Discourse Recall by EMR Individuals

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Effects of Textual Dimensions
on Discourse Recall

by EMR Individuals
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Recall of textual ideas vary from person to person, but on the whole, readers recall some ideas better than other. For example, studies have demonstrated (Johnson, 1970; Luftig & Johnson, in press) that skilled comprehenders are sensitive to the differing levels of importance of ideational subunits within prose passages. Furthermore, a significant, positive relationship has been shown to exist between accurate judging of important subunits and differential recall of the ideational subunits by skilled comprehenders (Johnson, 1970; Johnson & Scheidt, 1977; Luftig & Johnson, in press). In general, important ideational subunits are remembered best among skilled comprehenders.

Structural importance, however, is not the only variable which ideational subunits may be rated and differentially recalled. Rather, it appears that there are other textual variables which may compete for the limited attentional and memory processes of the readers. For example, Johnson (1974) demonstrated that for college readers, the textual variable of idea interest, imagery, and comprehensibility were reliable and independent measures and that ratings of these variables and structural importance could predict recall. Likewise, it has been demonstrated (e.g. Brown & Smiley, 1977; Luftig & Johnson, in press) that one difference between mature, experienced and immature, less experienced comprehenders is in the ability to discriminate text on the basis of the terms of the author's designation of superordinate and subordinate ideas rather than on the basis of other variables not necessarily in the author's presentation design. Thus, it is believed that part of the process of adequately separating

thematically important information and differentially remembering important ideas involves selectively non-attending and rating the passage along thematically irrelevant textual variables.

Two textual variables beside structural importance which may also influence what is recalled are idea saliency and textual imagery. Idea saliency refers to the phenomenon that certain idea units may be reliably rated as being more interesting or attention getting than other idea units but which may also be relatively unimportant and peripheral to the author's intended topic. Textual imagery refers to the phenomenon that certain ideas are more imaginable or picture evoking than other ideas. Like idea saliency, textual imagery is thought to be relatively independent of structural importance. Idea units high in imagery or saliency are not necessarily thematically important.

Both idea saliency and textual imagery have been shown to influence what is remembered from text. For example, Luftig and Johnson (in press) demonstrated that idea saliency was a significant variable in predicting recall of prose by mentally retarded students, while other investigators have reported similar findings for unrelated stimuli (Fisher & Zeaman, 1973; Zeaman & House, 1963).

Likewise, imagery has been shown to effect what is recalled from verbal materials (Begg & Paivio, 1969; DeVilliers, 1975; Paivio, 1971, 1978). It has been shown to facilitate recall of verbal materials by adults (Paivio, 1978), children (Greeson, in press; Pressley, 1977), and by mentally retarded and learning disabled individuals (Greeson, notes 1 & 2; Greeson & Jens, 1977). Unfortunately, many of the studies investigating the effects of imagery on children have utilized relatively simplistic, unrelated verbal stimuli rather than connected text. The present study endeavored to investigate the effects

of this variable on pupils using connected, narrative prose. It was believed that the use of connected text posed an appropriately complex and realistic task in which to observe the effects of imagery on learning by children.

The present study investigated the effects of making ratings of idea importance, saliency, or textual imagery on story recall by mentally retarded, second grade and sixth grade pupils. Developmental differences have been demonstrated in amount of prose material remembered (e.g. Brown & Smiley, 1977; Campione & Brown, 1977; Luftig & Johnson, in press). However, studies have not investigated whether developmental differences in recall were associated with similar differences in accurately differentiating important from unimportant information while systematically nonattending to competing textual variables such as idea saliency and imagery. One hypothesis of learning problems of young children and mentally retarded individuals states that such problems may be caused in part by failures to exercise appropriate cognitive strategies (Flavell & Wellman, 1977; Kail, 1979; Luftig & Johnson, in press; Wellman, Drezdal, Flavell, Salatas, & Ritter, 1975). One such strategy may be the appropriate use of idea importance levels in text comprehension and recall. The current study investigated developmental differences in making accuracy judgments of idea units along the three textual variables as well as the effects of making ratings on text recall. It was hypothesized that grade differences would exist in rating accuracy, that young children and retarded individuals would be more susceptible to the deleterious effects of idea saliency and textual imagery, and that the act of making ratings of ideational units along one of the three textual variables would influence passage recall.

Method

Subjects:

One hundred eighty students, sixty at each of three grade levels participated in the study. The three grade levels were second grade, sixth grade, and mildly mentally retarded (EMR). The second grade students ranged chronologically from 7-9 years to 9-3 years ($\bar{X}$ = 8-5 years, s = .54 years), the sixth grade pupils from 11-1 years through 12-2 years ($\bar{X}$ = 11-4, s = .71 years), and the mentally retarded individuals from 13-0 to 16-0 years ($\bar{X}$ = 14-8, s = 2-1 years). The mental ages of the retarded individuals ranged from 7-6 to 11-2 ($\bar{X}$ = 10-8, s = 1.97) while the mental ages of the second grade and sixth grade students were judged to be within two years of chronological age as judged by the child's cumulative folders. All of the mentally retarded individuals were attending school full time and were enrolled in self-contained public school classes for the mildly mentally retarded in four school districts in south-central Ohio. The second grade and sixth grade pupils were recruited from two school districts in south-central Ohio or from a university run public school. All subjects participated in the study during the 1980-1981 school year.

As judged from the cumulative folders, the students were free of neurological handicaps, defects in hearing, and uncorrected visual defects. All participants resided in a home or foster home with a parent or guardian and attended school on a full-time basis.

Materials

A 289-word fictional passage entitled "The Bank Robbery" was used. The story was previously ascertained to be of appropriate reading difficulty and interest level to mentally retarded adolescents (Luftig & Johnson, in press).

Thirty-four college students made ratings of pausal acceptability of "The Bank Robbery" (see Johnson, 1970; Luftig & Johnson, in press for methodological procedures). The boundary of an ideational unit was assumed when at least 66% of the raters indicated a given location would be an acceptable place for a pause. Fifty-seven pausal units were identified in the story.

Additionally, 36 other college raters judged the 57 idea units for structural importance while two other separate groups of 36 raters each judged the idea units on either idea saliency or textual imagery. Raters of structural importance were asked to judge each idea units of the story on a scale from 1 to 7 with "1" being "least important" and "7" being "most important". Likewise the groups judging either saliency or imagery were asked to rate the units on a similar 7-point scale. Mean importance saliency and imagery scores for each of the 57 idea units were obtained, and the units were separately rank ordered on the three dimemsions. Following the rank orderings, the units were subdivided into three categories of low, medium, and high for each of the three textual dimensions. Thus, nineteen units were contained in each category for the dimensions of structural importance, saliency, and imagery. In an assessment of the reliability of ratings of structural importance, idea saliency, and imagery each group of raters were split in half. A comparison of the ordering of importance of the 57 units showed a Pearson r of .74. Comparisons of the rank orderings of the two groups who made saliency judgments was .87 while r for the two imagery groups was .82.

An assessment of the degree of correlation between the three textual dimensions was also made across the 57 idea units. The degree of correlation between structural importance and saliency was $r = .11$, between importance and imagery $r = .05$, and between stimulus saliency and imagery was $r = .15$. This indicated that the three textual dimension were relatively independent.

Procedure

A total of eighteen groups in a 3x2x3 factorial design, with the treatment conditions differing as a function of whether pupils made ratings of structural importance, saliency or textual imagery and whether ratings were made prior to or after story recall, and grade level (second, sixth, or EMR).

All 180 students in the study were tested individually. The students were informed that they would be hearing a story. A printed copy of the story was made available, and learners were encouraged to read the story as it was presented auditorily. The pupils were told that if they experienced difficulty in reading and listening, they could simply listen. Auditory presentation was slow enough to allow students to read the text and listen to the story but not so slow as to destroy meaning of the phrase units. While the story was being auditorily presented via tape recording, the experimenter sat next to the child and pointed to the appropriate words.

All subjects then heard and read "The Bank Robbery". Following this, students in the rate-recall conditions received a second presentation of the story in which the idea units were presented one at a time. Subjects then made either structural importance, idea saliency or imagery ratings utilizing a three point scale devised by Luftig and Johnson (in press). For structural importance, for example, a rating of "1 " was "not important", a rating "2" was "a little important", and a rating of "3 " was "very important". Parallel scales existed for saliency and textual imagery. The 3-point scale was utilized after pilot data indicated that retarded students did not adequately handle the relative complexity of a 7-point scale (Luftig & Johnson, in press).

Groups in the recall-rate conditions heard the study, attempted to recall the story, and then rated the story for structural importance, idea saliency or imagery exactly as in the rate-recall conditions. However, to equalize

number of story presentations between groups, subjects in the recall-rate conditions rated the story after initial presentation by stating a number from 1-10 after each presented idea units prior to recall utilizing the same rating procedure as in rate/recall conditions.

All groups attempted to recall the story either before rating on a textual variable (recall-rate), or after rating on a textual variable (rate-recall). Students attempted to orally recite the story into a tape recorder and were instructed to remember as much of the story as they could.

Prior to hearing and reading "The Bank Robbery", all students listened to and read a practice story titled "The Fireman's Friend". This story was similar in length and vocabulary complexity to "The Bank Robbery" and contained 62 idea units as judged by 32 independent college raters. Students received practice making ratings on the "The Fireman's Friend" along the same textual dimension (structural importance, idea saliency, or imagery) which they eventually made on "The Bank Robbery". As the students make ratings of idea units on "The Fireman's Friend", they received feedback as to the adequacy of their ratings. Students were allowed to hear, rate, and recall "The Bank Robbery" only when it was ascertained by the experimenter that the student could adequately rate "The Fireman's Friend" along the textual dimension in question. Four students could not adequately rate "The Fireman's Friend" after repeated instruction and practice and were replaced in the experiment by other students in the subject pool.

Results

Ratings

Students at the three grade levels made ratings of one of the three textual dimensions, and either rated the idea units before or after attempting

story recall. Analyses were conducted by utilizing three between subject variables (grade, textual variable, rate order) and one within subject dimension (rate level; "1", "2", or "3" for the 57 idea units) in repeated measures analyses of variance.

In judging the structural importance, idea saliency, or imagery levels of textual idea units, the students were allowed to select the low, medium, or high rating categories as often as desired. To determine possible response biases, calculation was made of each learner's usages of the three rating categories. The mean proportions of judgments in each of the three rating categories may be seen in Table 1 for each textual dimension. Following arcsin transformation of the individuals proportions to stabilize the variances (Winer, 1971), repeated measures analyses of variances were conducted for response biases for each textual dimension. For all three textual dimensions, response biases existed for the three category levels (Importance; df 2,162, $F = 49.99$, $p < .001$; Saliency; 2,162, $F = 14.67$, $p < .001$; Imagery; df 2,162, $F = 78.18$, $p < .001$). For structural importance and imagery the category of "high ("3") was chosen significantly more than the other two categories. in each textual dimension ($p < .001$). For idea saliency, the category "low" ("1") was chosen more often then the other two categories ($p < .01$). For structural importance and imagery there was a significant grade X rate/recall order X category level interaction (Importance; df 4,162, $F = 2.71$, $p < .03$; Imagery, df 4,162, $F = 2.50$, $p < .04$). Analysis of simple main effects indicated that the only significant contributor to the triple interactions was that of category level.

Insert Table 1 about here

Comparisons were made of each student's degree of accuracy in making judgments of structural importance, idea saliency or imagery. To determine the accuracy of each pupil's rating, comparisons were made against the rank ordering of the 57 units as judged by the college raters. For example if a pupil rated 20 units as being of low importance, a comparison was made with the 21 units ranked lowest in importance by the college raters who rated the 57 story ideas for structural importance. If 10 of the 20 units also were included in the lowest 20 units of the college raters, that pupil's accuracy score for low importance ratings was 10/20 = .500. If that same rater then placed 14 units in the medium importance category, matches were then sought among the 14 units of the college raters that ranked from the 21 lowest to 34th lowest in importance. An agreement of 6 units would have yeilded an accuracy rate of 6/14 = .429 for the meduim importance category. Finally, the remaining 23 units placed in the high importance category were examined for degree of agreement with the upper 23 units of the college judges of structural importance. This process was carried out for each of the 180 pupils who made ratings with the appropriate college rating group utilized depending upon whether the pupil had made ratings of structural importance, idea saliency, or imagery.

Accuracy scores also were computed that corrected for the possibility of guessing. The more frequent a learner's usage of a particular rating category, the greater the probability by chance that a rating in that category would correctly match the corresponding band width of rankings by the college students. With selections of 9, 15, and 32 in the low, middle, and high categories, for example, the corresponding probabilities of the initial rating being correct by chance would be 9/57=.157, 15/57=.263, and 32/57 = .561 If the initial judgment of importance had been a "low," the corresponding probabilities of a correct chance placement on the second judgment would be 7/56 = .125, 15/56=.268, and 32/56 = .571. The formula used in correcting a particular judgment thus was

the residual size of the selected rating category divided by the total number of judgments remaining in all rating categories. A running account was kept for each learner of the probability of a correct placement by chance for each of the 57 ratings. After cumulation of the chance probabilities for a learner in each of the three judgmental categories, the learner's accuracy scores were modified appropriately as a correction for guessing.

Table 2 shows the means of the corrected accuracy scores for the experimental groups at each category level for each textual variable. Analyses of variances with two between subject variables (grade, rate/recall order) and repeated measures on one within subject variable (category level) were conducted on the accuracy scores for each textual variable. For structural importance and saliency, category level yielded a significant main effect (Importance, df, 2,108, $F = 14.55$, $p < .001$; Saliency, df, 2,108, $F = 3.11$, $p < .05$), while for imagery, category level approached but did not reach significance ($p < .07$). A significant saliency level X grade interaction was found (df, 4,108, $F = 2.68$, $p < .05$), while the imagery level X grade X rate/recall order interaction approached but did not reach significance ($p < .06$). For all groups making judgments of structural importance, pupils were more accurate in identifying units low in importance than units of high or medium importance. For idea saliency, post analysis revealed that second grade and sixth grade pupils were more accurate in identifying units of low and medium saliency than units high in saliency. However, the retarded pupils did not differ among themselves in accuracy at the three saliency levels.

Insert Table 2 about here

Finally an analysis of variance of accuracy levels was carried out between the three grades across the three textual variables. Because rate-recall order was not significant in any of the prior accuracy ANOVA's, it was dropped from this analysis. Table 3 contains the composite accuracy levels for each grade and for each textual variable across the category levels. A significant main effect was found for textual variable (df 2,171, $F = 10.29$, $p < .001$). Across category levels, students were more in rating ideas on the basis of structural importance than on the basis of either stimulus saliency or imagery.

Insert Table 3 about here

Recall of Idea Units

Recall of idea units was measured by having two independent judges analyze the tape-recorded protocols of the 180 pupils. An idea unit was judged to have been recalled if the gist of the idea was remembered by the learner. When judges disagreed on whether or not a unit had been recalled, the decision of a third judge was accepted. The interrater agreement between the two primary judges was $r = .97$.

Table 4 shows the mean number of idea units recalled by the experimental groups as a function of the textual variable which the pupils used as the basis of their ratings and whether recall was attempted prior to or after rating the units. Analyses of variance were conducted with two between subject variables (grade, rate/recall order), and one repeated measures within subject variable (category level). For raters of structural importance, significant main effects in recall were found for grade (df 2,54, $F = 8.88$, $p < .001$) rate/recall order (df, 1,54, $F = 3.99$, $p < .05$) and importance level (df, 2,108, $F = 56.81$, $p < .001$).

Mentally retarded pupils who made ratings of importance recalled significantly less of the total story than either the second grade or sixth grade pupils ($p < .01$). Across grade levels, pupils who made ratings of structural importance prior to attempting recall remembered significantly more of the story than students who attempted recall and then made ratings ($p < .05$). Finally across groups and rate/recall order, pupils who made ratings of structural importance recalled more high importance and medium importance then low importance units($p < .001$). In every experimental cell in the structural importance condition, there was a linear relationship between importance level and recall.

Insert Table 4 about here

For students who made ratings of idea saliency, a significant interaction was found for grade (df, 2,54, $F = 19.87$, $p < .001$), saliency level (df, 2,108, $F = 21.34$, $p < .001$), and the saliency level X grade interaction (df, 4,108, $F = 6.12$, $p < .001$). For students who made ratings of saliency, the retarded students remembered significantly more of the story than the second grade pupils but did not recall more than the sixth grade students ($p < .01$). For all pupils who made ratings of idea saliency, idea units rated high in saliency were remembered significantly better than either items of medium of low saliency ($p < .01$). Analysis of the grade X saliency level interaction indicated that while the second grade pupils remembered differentially by all three saliency levels, the sixth grade remembered differentially by the high saliency level only. Finally, the analysis indicated that the retarded pupils did not remember differentially by saliency level of idea subunits.

An analysis of variance was conducted of recall of the story by pupils who made ratings of imagery. The only significant main effect was for grade

(df, 2,54, F = 16.32, p .001). The analysis indicated that a significant linear relationship existed in total recall as a function of grade ($p < .01$).

Finally an analysis of variance was conducted on total recall of the story for the three textual variables by grade and recall order. Table 5 shows the mean number of idea units recalled by each experimental group. The analysis revealed a significant main effect for grade (df, 2,162, F = 2.54, $p < .007$). The analysis revealed that sixth grade pupils recalled significantly more than either the second grade students or the retarded individuals but that the two latter groups did not differ from each other in recall over the three textual variables. Analysis of the interaction indicated that sixth grade pupils who rate/recalled or recall/rated were significantly different from both conditions of mentally retarded students ($p < .01$) but were significantly different only from first grade pupils who recalled/rated the story ($p < .01$).

Insert Table 5 about here

Discussion

Ratings

The present experiment attempted to assess the accuracy of mentally retarded, second grade, and sixth grade pupils in differentially identifying levels of structural importance, idea saliency, and imagery of idea subunits of a story. It also investigated the effects of making those ratings upon story recall as well as the effects of attempting recall on rating accuracy. Finally, the three textual variables were investigated to judge which rating variable had the greatest influence on story recall.

The finding that the mentally retarded pupils were more accurate in identifying units low in structural importance than units of high importance, support

the findings of Luftig and Johnson (in press). However, the current finding that the second grade and sixth grade pupils operated in the same manner was unexpected. Brown and Smiley (1977), for example found developmental differences among normal students in the ability to reliably differentiate the relative structural importance of idea units of a folktale. However, while Brown and Smiley used Japanese folktales as their stimulus materials, the present study used a story more congruent with the experiences, knowledge, and interests of typical American students. It may be that in the present study, the pupils were utilizing this outside knowledge in making accurate judgments of structural importance. Since the current story was aimed at the reading level, knowledge base, and experiences of the lowest functioning grade level'i.e. the retarded student), it may also be that these knowledge bases and experiences were well formulated into the cognitive repetoire of the second grace and sixth grade pupils. Thus, developmental differences in making accuracy ratings may have been negated.

Grade differences were found in the ability to accurately rate the idea saliency of idea units. While the second grade and sixth grade pupils demonstrated more accuracy in identifying low salient units than high salient units, the retarded pupils did not demonstrate an accuracy advantage at any of the three saliency levels. Combined with the fact that the retarded pupils were generally less accurate than the sixth grade pupils in judging both the structural importance and idea saliency of the idea units, this finding supports the hypothesis that mentally retarded students may not be able to selectively attend to the important ideas of a story while selectively non-attending to the salient but unimportant story ideas. This hypothesis originally formulated by Zeaman and House (1963) and Fisher and Zeaman (1973) utilizing non-discourse stimuli posits that mentally retarded learners suffer from a selective attention deficit in which stimuli are organized along salient rather than

critical attribute dimensions. The current experiment confirmed the hypothesis utilizing schoolike discourse materials and may hold implications for text authors in terms of highlighting the saliency of important text ideas while downplaying saliency of subordinate idea units.

Recall

As expected, grade differences were found in amount of the story recalled for the three textual variable rating conditions. In general, the mentally retarded individuals recalled less than both the second grade and sixth grade pupils but operated more closely to the second grade pupils. For all groups, there was a linear relationship between importance level and recall. Thus, even though the students were more accurate in identifying low importance units than high importance units, they nevertheless recalled more high importance ideas This finding supports the results reported by Luftig and Johnson (in press) and Brown and Smiley (1977) in that elementary school children and mentally retarded individuals who could not reliably differentiate high levels of importance neverthelss could recall what was important in a story.

The present study also found a significant grade X saliency interaction effect in that retarded students who were not especially accurate in rating the saliency of idea units nevertheless were more accurate in recalling high saliency units than the second grade pupils. This occurred despite the fact that the second grade pupils were more accurate in rating idea units for saliency than the retarded pupils. Since this effect held for high saliency units only, the finding further supports the selective attention/stimulus saliency hypothesis of remembering (Fisher & Zeaman, 1973; Zeaman & House, 1963). It may be that the retarded pupils were selectively drawn to the high salient/low importance units even though they could not reliably and accurately rate the saliency of these items. It may also be that these individuals either did not understand the concept of saliency (which was described to them as "interesting") or could

not overtly monitor their selective attention processes in order to reliably judge high from low saliency. Despite this hypothesized inability to overtly judge high from saliency, however, the retarded pupils nevertheless demonstrated the working of selective attention mechanisms by remembering better the high saliency idea units. However, further investigation needs to be conducted as to the effects of training on the imporvement of making saliency accuracy judgments of prose. Such investigation may lead to the conclusion that discourse selective attention/organizational deficits are control processes rather than structural/invariant memory features (see Atkinson and Shiffrin, 1968) and as such the ability to divert attention away from salient prose ideas to important ideas is succeptible to training. Such a finding would hold implications for teachers of individuals with selective attention/organizational deficits (e.g. the mentally retarded and cognitively immature children).

One of the questions investigated in the present study was the extent to which making ratings of structural importance, idea saliency, or imagery aided or hindered recall. This question was investigated by having half the pupils recall/rate while the other half recalled/rate the story. The results indicated that for raters of structural importance, the process of rating the idea unit for importance aided total recall of the story. However, the hypothesis that making ratings of structural importance would differentially enhance recall of high importance units was not supported. It may be that the act of making structural importance ratings sensitized the pupils to pay more attention to the story in general and thus recall more idea units overall than pupils who recalled the story before rating. If this is the case, then there would have to be a unique property of making ratings of structural importance operating act of making imagery or saliency ratings prior to recall did not enhance remembering. Such a unique property may be the relevance and centrality of

making covert importance judgments in the everyday school reading activities of children rather than their making tangental judgments of imagery and saliency during school reading. More study is needed of the enhancing effects of making ratings of idea importance or recall before solid conclusions can be drawn but if recall accuracy and magnitude of recall can be facilitated by training children to make accurate and reliable judgments of importance, new areas of emphasis in reading instruction might be appropriate.

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Table 1

Mean Response Bias Proportions of Category Choice for the Three Textual Variables

Importance

EMR	2nd Grade						6th Grade					
	Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate		
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
	.298	.263	.421	.214	.249	.519	.331	.308	.395	.291	.188	.523	.306	.207	.472	.337	.257	.409

Saliency

EMR	2nd Grade						6th Grade					
	Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate		
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
	.177	.323	.482	.382	.270	.330	.411	.211	.235	.482	.291	.209	.392	.351	.235	.532	.307	.143

Imagery

EMR	2nd Grade						6th Grade					
	Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate		
	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
	.181	.144	.330	.163	.284	.528	.200	.305	.477	.202	.291	.549	.191	.291	.500	.249	.266	.477

Table 2

Means of Accuracy Proportions for the Three Textual Variables

Structural Importance

EMR						Second Grade						Sixth Grade					
Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate		
Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
.505	.410	.368	.592	.363	.338	.513	.351	.310	.539	.357	.332	.620	.390	.376	.476	.309	.377

Idea Salience

EMR						Second Grade						Sixth Grade					
Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate		
Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
.294	.267	.324	.383	.408	.365	.355	.337	.217	.348	.398	.229	.405	.308	.379	.389	.374	.302

Textual Imagery

EMR						Second Grade						Sixth Grade					
Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate		
Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
.380	.414	.371	.331	.321	.324	.284	.326	.405	.516	.360	.352	.407	.309	.352	.411	.270	.328

Table 3

Means of Accuracy Level Proportions for the Three Textual Variables Across Category Levels

EMR			Second Grade			Sixth Grade		
Importance	Saliency	Imagery	Importance	Saliency	Imagery	Importance	Saliency	Imagery
.430	.340	.357	.400	.314	.374	.425	.359	.346

Table 4

Means of Idea Units Recalled by Each Rating Variable Group*

Structural Importance

EMR						Second Grade						Sixth Grade					
Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate		
Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
7.0	8.2	11.0	5.0	7.0	8.4	10.1	12.5	14.0	8.5	10.4	10.6	11.1	12.9	16.2	9.9	12.0	14.0

Idea Saliency

EMR						Second Grade						Sixth Grade					
Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate		
Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
9.7	11.0	9.3	8.1	8.6	9.2	4.9	4.5	7.9	7.4	7.7	9.6	12.0	12.2	14.7	11.5	12.1	15.1

Textual Imagery

EMR						Second Grade						Sixth Grade					
Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate			Rate-Recall			Recall-Rate		
Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High	Low	Med	High
7.5	7.5	7.4	6.1	6.3	7.0	10.8	12.2	10.2	9.1	7.4	8.7	11.8	12.6	11.9	12.9	12.2	13.8

*out of 19 idea units in each category

Table 5

Means of Total Items Recall at Each Textual Variable Across Category Rating Levels*

EMR		Second Grade		Sixth Grade	
Importance		Importance		Importance	
Rate-Recall	Recall-Rate	Rate-Recall	Recall-Rate	Rate-Recall	Recall-Rate
26.2	20.4	36.6	25.5	40.3	35.9
Saliency		Saliency		Saliency	
Rate-Recall	Recall-Rate	Rate-Recall	Recall-Rate	Rate-Recall	Recall-Rate
30.0	25.9	17.3	24.7	38.9	38.7
Imagery		Imagery		Imagery	
Rate-Recall	Recall-Rate	Rate-Recall	Recall-Rate	Rate-Recall	Recall-Rate
22.4	19.4	33.2	25.2	36.3	38.9

*out of 57 idea units

Footnotes

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